



EXPEDITED PROCEDURE
Application No.: 09/249,597
Art Unit 2674

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

Claims 1-12 (canceled).

Claim 13 (currently amended): A wearable computer for use in a process control environment having a process control system including a plurality of process control devices disposed within the process, the wearable computer comprising:

a processing unit;

a memory;

an imaging device that produces an image signal;

an image processor that processes the image signal to identify one of the devices based on a device feature identified by the image signal; [[and]]

a software routine stored in the memory and adapted to be executed on the processing unit to provide process information generated by one or more of the plurality of process control devices during operation of the process;

an input device adapted to produce an input signal;

a remote communication device that communicates with the process control system;
and

a further software routine run on the processing unit that processes the input signal to develop a change signal indicating a change to be made in a process signal within the process control system and that communicates the change signal to the process control system via the remote communication device to thereby cause a change to be made to the process signal,
where the process signal indicates a characteristic of the process during normal operation of the process.

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Claim 14 (original): The wearable computer of claim 13, further including a heads up display and a display unit coupled to the image processor that displays information pertaining to the identified device on the heads up display.

Claim 15 (original): The wearable computer of claim 14, wherein the information is diagnostic information related to the identified device.

Claim 16 (original): The wearable computer of claim 14, wherein the information is help information related to the identified device.

Claim 17 (original): The wearable computer of claim 14, further including a remote communication device that communicates with the process control system and wherein the information is process information obtained from the identified device and sent to the wearable computer via the remote communication device.

Claim 18 (original): The wearable computer of claim 13, wherein the imaging device is a video camera that produces a multi-frame image signal and wherein the image processor includes a frame grabber that grabs an image frame from the multi-frame image signal.

Claim 19 (original): The wearable computer of claim 13, wherein the device feature includes an alpha-numeric character and wherein the image processor includes an optical character recognition routine that decodes the alpha-numeric character within the image signal to identify the device.

Claim 20 (original): The wearable computer of claim 13, wherein the device feature is a device tag and wherein the image processor includes an optical character recognition routine that decodes the device tag within the image signal to identify the one of the multiple devices.

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Claim 21 (original): The wearable computer of claim 13, further including a microphone that produces a speech signal and a voice recognition unit coupled to the microphone that decodes the speech signal to produce a command signal.

Claim 22 (original): The wearable computer of claim 13, further including a microphone that produces a speech signal and a memory that stores the speech signal as associated with the identified device.

Claim 23 (original): The wearable computer of claim 13, further including a microphone that produces a speech signal and a remote communication device that sends the speech signal to a memory within the process control system for storage in and retrieval from a memory as associated with the identified device.

Claim 24 (currently amended): A device identification unit within a wearable computer having a processor an input device that develops an input signal, a remote communication device that communicates with the process control system and an imaging device that produces an image signal, where the wearable computer is adapted for use in a process control system including a plurality of process control devices disposed within a process, the device identification unit comprising:

a memory; and

a software routine stored in the memory and adapted to be executed on the processor to process the image signal to identify a device based on a device feature identified by the image signal, [[and]] to provide process information generated by one or more of the plurality of process control devices during operation of the process, and to process the input signal so as to develop a change signal indicating a change to be made in a process signal within the process control system and to communicate the change signal to the process control system via the remote communication device to thereby cause the change to be made to the process signal, where the process signal indicates a characteristic of the process during normal operation of the process.

Claim 25 (original): The device identification unit of claim 24, wherein the wearable computer includes a heads up display and wherein the software routine displays information pertaining to the identified device on the heads up display.

Claim 26 (original): The device identification unit of claim 25, wherein the wearable computer further includes a remote communication device that communicates with a process control system coupled to the identified device and wherein the information is process information obtained from the identified device and sent to the wearable computer via the remote communication device.

Claim 27 (original): The device identification unit of claim 24, wherein the imaging device of the wearable computer is a video camera that produces a multi-frame image signal and further including a frame grabber that grabs one image frame from the multi-frame image signal as the image signal.

Claim 28 (original): The device identification unit of claim 24, wherein the device feature includes an alpha-numeric character and further including an optical character recognition routine that decodes the alpha-numeric character within the image signal to identify the device.

Claim 29 (original): The device identification unit of claim 24, wherein the device feature is a device tag and further including an optical character recognition routine that decodes the device tag within the image signal to identify the device.

Claim 30 (original): The device identification unit of claim 24, wherein the wearable computer includes a microphone that produces a speech signal and further including a voice recognition unit coupled to the microphone that decodes the speech signal to produce a command.

Claim 31 (withdrawn): A wearable computer for use in a process environment having a process control system therein, comprising:

a processing unit;

a computer readable memory coupled to the processing unit;

a heads up display;

a routine stored in the computer readable memory and run on the processing unit that produces an image for display on the heads up display;

a microphone that produces a speech signal; and

a voice recognition unit that processes the speech signal to identify a command and that causes changes to be made in the image displayed on the heads up display based on the identified command.

Claim 32 (withdrawn): The wearable computer of claim 31, wherein the voice recognition unit compares the speech signal to a set of stored recognized commands to identify the command and wherein the set of stored recognized commands are related to moving a cursor on the image displayed on the heads up display.

Claim 33 (withdrawn): The wearable computer of claim 32, wherein the set of stored recognized commands comprises one of a left movement command, a right movement command, an up movement command and a down movement command.

Claim 34 (withdrawn): The wearable computer of claim 31, wherein the voice recognition unit compares the speech signal to a set of stored recognized commands to identify the command and wherein the set of stored recognized commands are related to entering alpha-numeric data in a field within the image displayed on the heads up display.

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Claim 35 (withdrawn): The wearable computer of claim 31, wherein the routine displays the image as having a list of devices for selection and the voice recognition unit identifies one of the list of devices based on the speech signal.

Claim 36 (withdrawn): The wearable computer of claim 31, wherein the routine displays an image having a list of channels for selection and the voice recognition unit identifies one of the list of channels based on the speech signal.

Claim 37 (withdrawn): The wearable computer of claim 31, wherein the routine displays the image as having a process value and a field for changing the process value.

Claim 38 (previously presented): A wearable computer system for use in testing a process control system including a plurality of process control devices disposed within a process and external to the wearable computer, the wearable computer comprising:

a processing unit;

a computer readable memory;

an input device adapted to produce an input signal;

a remote communication device that communicates with the process control system;

and

a software routine run on the processing unit that processes the input signal to develop a change signal indicating a change to be made in a process signal within the process control system and that communicates the change signal to the process control system via the remote communication device to thereby cause a change to be made to the process signal, where the process signal indicates a characteristic of the process during normal operation of the process.

Claim 39 (original): The wearable computer of claim 38, further including a heads up display and wherein the software routine communicates with the process control system to obtain the actual value of the process signal and displays the actual value of the process signal via the heads up display.

Claim 40 (withdrawn): The wearable computer of claim 38, wherein the input device is a microphone that produces a speech signal and further including a voice recognition unit that decodes the speech signal to develop the change signal.

Claim 41 (original): The wearable computer of claim 38, further including a heads up display that displays an image and wherein the software routine produces a screen on the heads up display having a list of communication channels therein and enables the user to select one of the communication channels using the input device.

Claim 42 (original): The wearable computer of claim 41, wherein the software routine displays the type of process signal on a selected communication channel via the heads up display.

Claim 43 (original): The wearable computer of claim 41, wherein the software routine displays a valid range of the process signal on a selected communication channel via the heads up display.

Claim 44 (original): The wearable computer of claim 41, wherein the software routine enables a user to enter the change signal for the process signal in a field on the heads up display.

Claim 45 (withdrawn)

Claim 46 (previously presented): A process control testing unit adapted for use in a process control system including a plurality of process control devices disposed within the process and external to a wearable computer, where the process control testing unit communicates with the wearable computer having a processor, an input device that develops

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an input signal, a remote communication device that communicates with the process control system and a heads up display, the process control testing unit comprising:

a memory; and

a software routine stored on the memory and adapted to be executed on the processor of the wearable computer to process the input signal so as to develop a change signal indicating a change to be made in a process signal within the process control system and to communicate the change signal to the process control system via the remote communication device to thereby cause the change to be made to the process signal, where the process signal indicates a characteristic of the process during normal operation of the process.

Claim 47 (original): The process control testing unit of claim 46, wherein the change signal indicates a change in a communication signal and causes the communication signal to be changed from a first value to a second value.

Claim 48 (original): The process control testing unit of claim 46, wherein the software routine communicates with the process control system to obtain the actual value of the process signal and displays the actual value of the process signal via the heads up display.

Claim 49 (original): The process control testing unit of claim 46, wherein the software routine displays a set of different process control signals for selection via the heads up display.

Claim 50 (withdrawn): The process control testing unit of claim 46, wherein the input device of the wearable computer is a microphone that produces a speech signal and further including a voice recognition unit that decodes the speech signal to develop the change signal.

Claim 51 (original): The process control testing unit of claim 46, wherein the software routine produces a screen on the heads up display having a list of communication

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channels therein and enables a user to select one of the communication channels using the input device.

Claim 52 (original): The process control testing unit of claim 51, wherein the software routine displays the type of process signal on a selected communication channel via the heads up display.

Claim 53 (original): The process control testing unit of claim 51, wherein the software routine displays a valid range of the process signal on a selected communication channel via the heads up display.

Claim 54 (original): The process control testing unit of claim 51, wherein the software routine enables a user to enter the change signal for the process signal in a field on the heads up display.

Claim 55 (currently amended): An image viewing unit for use in a process control system including an operator workstation having an operator processing unit, an operator display and an operator remote communication device, and including a wearable computer having an input device that develops an input signal, a remote communication device that communicates with the process control system, an imaging device that produces a first image, a portable display, a wearable remote communication device and a wearable processing unit, and a plurality of process control devices disposed within a process and external to the wearable computer, the image viewing unit comprising:

a first computer readable memory having a first software routine stored therein, said first software routine capable of being implemented on the operator processing unit to perform the functions of:

receiving a second image from the wearable computer via the operator remote communication device, wherein the second image is derived from the first image;

displaying the second image on the operator display;

enabling an operator to make changes to the displayed second image to create a third image; and

sending the third image to the wearable computer via the operator remote communication device; and

a second computer readable memory having a second software routine stored therein, said second software routine capable of being implemented on the wearable processing unit to perform the functions of:

identifying a device based on a device feature identified by the first image;

creating the second image from the first image by making graphical changes to the first image;

sending the second image to the operator workstation via the wearable remote communication device;

receiving the third image from the operator workstation via the wearable remote communication device; [[and]]

displaying the third image on the portable display; and

processing the input signal so as to develop a change signal indicating a change to be made in a process signal within the process control system and to communicate the change signal to the process control system via the remote communication device to thereby cause the change to be made to the process signal, where the process signal indicates a characteristic of the process during normal operation of the process.

Claim 56 (original): The image viewing unit of claim 55, wherein the first software routine sends the third image to the wearable computer by sending a base image to the wearable computer at a first time and by sending changes to the base image to the wearable computer at a second and later time.

Claim 57 (original): The image viewing unit of claim 56, wherein the first software routine allows an operator to choose the base image before sending the base image to the wearable computer.

Claim 58 (original): The image viewing unit of claim 55, wherein the second software routine enables a user of the wearable computer to make changes to the third image and sends the changes to the third image to the operator workstation via the wearable remote communication device.

Claim 59 (original): The image viewing unit of claim 55, wherein the second image is the first image.

Claim 60 (previously presented): A data storage/retrieval unit within a wearable computer adapted for use in a process control system including a plurality of process control devices disposed within a process, the wearable computer having a processor, a microphone that produces a voice signal, an input device that produces an input signal, a speaker and a heads up display, the data storage/retrieval unit comprising:

a computer readable memory;

a first software routine stored on the computer readable memory and adapted to be executed on the processor of the wearable computer that identifies a process control device based on a device feature captured by the input signal;

a second software routine stored on the computer readable memory and adapted to be executed on the processor of the wearable computer that receives the voice signal from the microphone and stores the received voice signal as being linked to the identified process control device in a further memory associated with the wearable computer in response to a first user input to store the received voice signal;

a third software routine stored on the computer readable memory and adapted to be executed on the processor of the wearable computer that provides an indication via the heads up display that a previously stored voice signal is available for the identified process control device when the previously stored voice signal exists for the identified process control device in the further memory and that plays the previously stored voice signal for the identified process control device on the speaker in response to a second user input selecting the previously stored voice signal for the identified process control device for retrieval; and

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a fourth software routine stored on the computer readable memory and adapted to be executed on the processor of the wearable computer that provides process information generated by one or more of the plurality of process control devices during operation of the process.

Claim 61 (original): The data storage/retrieval unit of claim 60, wherein the input signal is a video image and the first software routine includes an image processing routine that processes the video image to identify the process control device.

Claim 62 (original): The data storage/retrieval unit of claim 61, wherein the image processing routine includes an optical character recognition routine that recognizes alpha-numeric characters within the video image and the image processing routine identifies the process control device based on the alpha-numeric characters.

Claim 63 (withdrawn): The data storage/retrieval unit of claim 60, wherein the input signal is a voice signal and the first software routine includes a voice recognition unit that identifies the process control device based on the voice signal.

Claim 64 (original): The data storage/retrieval unit of claim 60, wherein the wearable computer includes a remote communication device that communicates with a process control system coupled to the identified process control device and the further memory is within the process control system, and further including a fourth software routine that communicates with the further memory via the remote communication device.

Claim 65 (original): The data storage/retrieval unit of claim 60, wherein the third software routine displays an icon via the heads up display as the indication.

Claim 66 (withdrawn): The data storage/retrieval unit of claim 65, wherein the second user input signal is a voice signal, the third software routine includes a voice

recognition unit that process the voice signal to identify a user command to select the icon and the third software routine replays the previously stored voice signal for the identified process control device when the icon is selected.

Claim 67 (currently amended): An image viewing system for use in a process control system including an operator workstation having an operator processing unit, an operator display and an operator remote communication device, and including a wearable computer having an input device that develops an input signal, a remote communication device that communicates with the process control system, an imaging device that produces a first image, a portable display, a wearable remote communication device and a wearable processing unit, and a plurality of process control devices disposed within a process and external to the wearable computer, the image viewing system comprising:

a first computer readable memory having a first software routine stored therein, said first software routine capable of being implemented on the operator processing unit to perform the functions of:

receiving a second image from the wearable computer via the operator remote communication device;

displaying the second image on the operator display;

enabling an operator to make changes to the displayed second image to create a third image; and

sending the third image to the wearable computer via the operator remote communication device; and

a second computer readable memory having a second software routine stored therein, said second software routine capable of being implemented on the wearable processing unit to perform the functions of:

identifying a device based on a device feature identified by the first image;

creating the second image from the first image by making graphical changes to the first image;

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sending the second image to the operator workstation via the wearable remote communication device;

receiving the third image from the operator workstation via the wearable remote communication device; [[and]]

displaying the third image on the portable display; and

processing the input signal so as to develop a change signal indicating a change to be made in a process signal within the process control system and to communicate the change signal to the process control system via the remote communication device to thereby cause the change to be made to the process signal, where the process signal indicates a characteristic of the process during normal operation of the process.

Claim 68 (previously presented): The image viewing system of claim 67, wherein the graphical changes to the first image include changes in the form of movements of a pointer on the portable display.

Claim 69 (previously presented): The image viewing system of claim 67, wherein the first software routine sends the third image to the wearable computer by sending a base image to the wearable computer at a first time and by sending changes to the base image to the wearable computer at a second and later time.

Claim 70 (currently amended): An image viewing system for use in a process control system including an operator workstation having an operator processing unit, an operator display and an operator remote communication device, and including a wearable computer having an input device that develops an input signal, a remote communication device that communicates with the process control system, an imaging device that produces a first image, a portable display, a wearable remote communication device and a wearable processing unit, and a plurality of process control devices disposed within a process and external to the wearable computer, the image viewing system comprising:

a first computer readable memory having a first software routine stored therein, said first software routine capable of being implemented on the wearable processing unit to perform the functions of:

identifying a device based on a device feature identified by the first image;

receiving a second image from the operator workstation via the wearable remote communication device;

displaying the second image on the portable display;

enabling a wearable computer user to make changes to the displayed second image to create a third image; and

sending the third image to the operator workstation via the wearable remote communication device; and

a second computer readable memory having a second software routine stored therein, said second software routine capable of being implemented on the operator processing unit to perform the functions of:

creating the second image from the first image by making graphical changes to the first image;

sending the second image to the wearable computer via the operator remote communication device;

receiving the third image from the wearable computer via the operator remote communication device; [[and]]

displaying the third image on the operator display; and

processing the input signal so as to develop a change signal indicating a change to be made in a process signal within the process control system and to communicate the change signal to the process control system via the remote communication device to thereby cause the change to be made to the process signal, where the process signal indicates a characteristic of the process during normal operation of the process.

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Claim 71 (previously presented): The image viewing system of claim 70, wherein the graphical changes to the first image include changes in the form of movements of a pointer on the operator display.

Claim 72 (previously presented): The image viewing system of claim 70, wherein the first software routine sends the third image to the operator workstation by sending a base image to the operator workstation at a first time and by sending changes to the base image to the operator workstation at a second and later time.